

Unit 2 Practice Test

1) $A(3, -11)$ $B(-8, 1)$

$$\begin{aligned} m_{AB} &= \frac{y_2 - y_1}{x_2 - x_1} \\ &= \frac{1 - (-11)}{-8 - 3} \\ &= \frac{12}{-11} \\ &= -\frac{12}{11} \end{aligned}$$

$$\begin{aligned} M_{AB} &= \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right) \\ &= \left(\frac{3 + (-8)}{2}, \frac{-11 + 1}{2} \right) \\ &= \left(\frac{-5}{2}, \frac{-10}{2} \right) \\ &= \left(-\frac{5}{2}, -5 \right) \end{aligned}$$

$$\begin{aligned} d_{AB} &= \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \\ &= \sqrt{(-8 - 3)^2 + (1 - (-11))^2} \\ &= \sqrt{(-11)^2 + 12^2} \\ &= \sqrt{121 + 144} \\ &= \sqrt{265} \end{aligned}$$

2) $d = 24$

$$\begin{aligned} r &= \frac{d}{2} \\ &= \frac{24}{2} \\ &= 12 \end{aligned}$$

$$(x - h)^2 + (y - k)^2 = r^2$$

$$(x - 9)^2 + (y - 0)^2 = 12^2$$

$$(x - 9)^2 + y^2 = 144$$

3) need to find radius

$$\begin{aligned}x^2 + y^2 &= r^2 \\(-7)^2 + 8^2 &= r^2 \\49 + 64 &= r^2 \\113 &= r^2 \\\sqrt{113} &= r\end{aligned}$$

a) $(x-0)^2 + (y-0)^2 = r^2$

$$x^2 + y^2 = 113$$

b) x-intercepts $(\pm r, 0)$

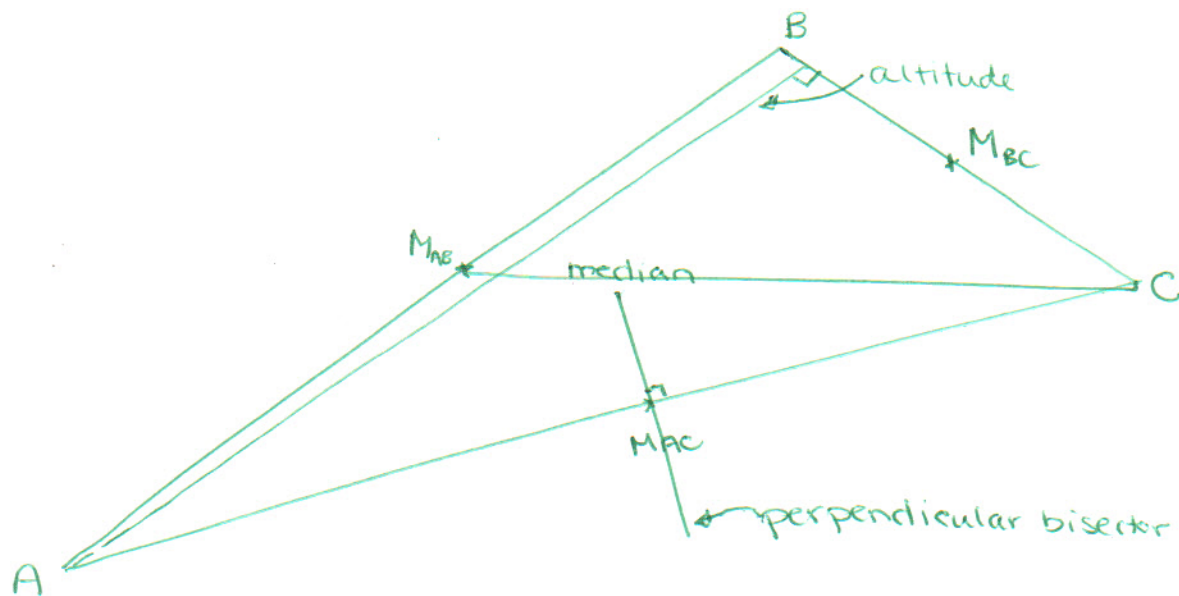
$$(\sqrt{113}, 0) \text{ \& } (-\sqrt{113}, 0)$$

c) y-intercepts $(0, \pm r)$

$$(0, \sqrt{113}) \text{ \& } (0, -\sqrt{113})$$

- 4)
- 1 - find the slope of AB $m = \frac{y_2 - y_1}{x_2 - x_1}$
 - 2 - write the equation of line AB (Line 1) $y = mx + b$
 - 3 - find the slope perpendicular to AB $m_{\perp} = -\frac{1}{m}$
 - 4 - write the equation of the line through C with a slope perpendicular to AB (Line 2) $y = mx + b$
 - 5 - find the POI between Line 1 and Line 2, call this point D
 - 6 - find the length of CD
 - 7 - find the length of AB
 - 8 - calculate the area of the triangle using AB as the base and CD as the height. $A = \frac{bh}{2}$
- $$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

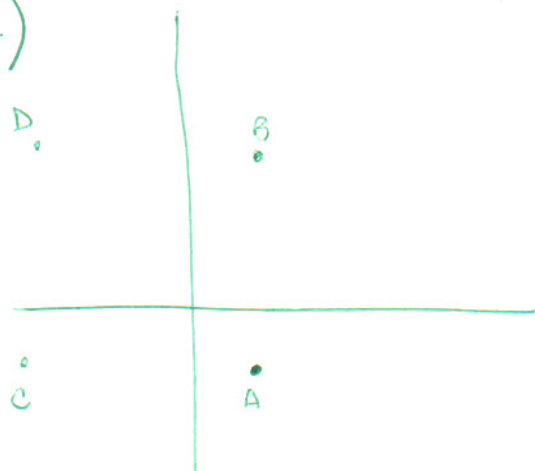
6)



7) 2 diagonals are AD & BC

$$\begin{aligned} m_{AD} &= \underline{\underline{-5}} \quad (-2) \\ &= \underline{\underline{-5}} - 4 \\ &= \underline{\underline{-5}} + 2 \\ &= \underline{\underline{-9}} \\ &= \underline{\underline{-9}} \\ &= \underline{\underline{-9}} \\ &= \underline{\underline{-9}} \end{aligned}$$

7.)



2 diagonals are BC & AD (this should not happen!)

$$m_{AD} = \frac{5 - (-2)}{-5 - 4}$$

$$= \frac{5+2}{-9}$$

$$= -\frac{7}{9}$$

$$m_{BC} = \frac{-2 - 5}{-5 - 4}$$

$$= \frac{-7}{-9}$$

$$= \frac{7}{9}$$

to be perpendicular $m_{AD} = \frac{-1}{m_{BC}}$

LS

$$m_{AD} = -\frac{7}{9}$$

RS

$$\frac{-1}{m_{BC}}$$

$$= \frac{-1}{-7/9}$$

$$= -1 \div \frac{7}{9}$$

$$= -1 \times \frac{9}{7}$$

$$= -\frac{9}{7}$$

LS \neq RS therefore the diagonals are not always perpendicular.

$$y = -\frac{1}{2}x + \frac{9}{2}$$

$$\begin{array}{rcl} (x2): & 8x - 30 & = -x + 9 \\ & 8x + x & = 9 + 30 \\ & 9x & = 39 \\ & x & = \frac{39}{9} = \frac{13}{3} \end{array} \quad y = \frac{7}{3}$$